Large-Scale Submerged Aquatic Vegetation Restoration Research in the Chesapeake Bay

Deborah Shafer[1]

Bill Abadie[2]

[1]Engineer Research and Development Center

[2]USACE Baltimore District

Funding Authorization

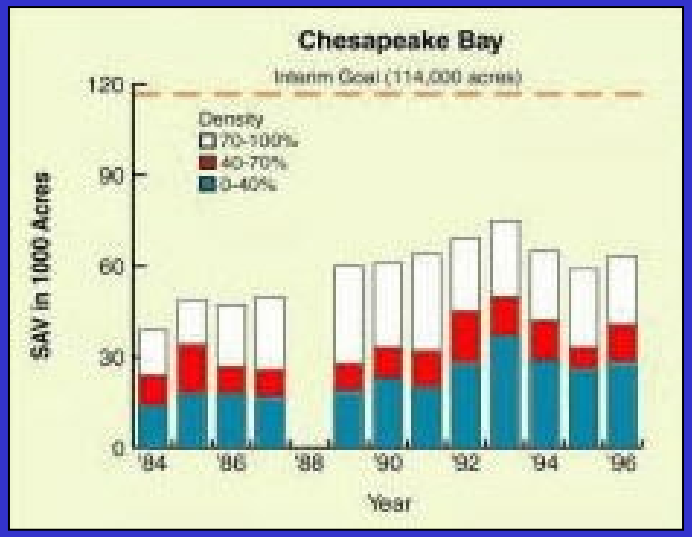
FY 2003 Omnibus Appropriations Bill

(GI Research and Development)

$500 K was provided "*to conduct investigations, assessment, and demonstrations on large-scale submerged aquatic vegetation restoration techniques and technologies. Appropriate demonstration activities should be considered within the Chesapeake Bay, MD.*"

(from p. 24, Senate Report 107-220)

Why is SAV Restoration Important?



Source: Chesapeake Bay Program

www.epa.gov/maia/html/es-habitat.html

- ***Of the more than 600,000 acres of SAV historically present in Chesapeake Bay, less than a tenth remains***
- ***More than 50% lost since the 1960's***
- ***More than 20 SAV species have declined***
- ***Although some increases in recent years, still far below***

Why is SAV Restoration Important?

SAV Performs many ecosystem functions:

- **wave attenuation**
- **sediment stabilization**
- **water quality improver**
- **primary production**
- **provide critical habitat str**

Blue Crab

Redhead Ducks

Source: National Zoo Photo Library

Problems

- Traditional approaches to SAV planting are extremely labor-intensive and costly, with a variable track record of success
- Significant investments in research and demonstrations must be made to improve our understanding of SAV restoration techniques
- Corps managers and stakeholders need guidance on selection of most appropriate methods for large-scale SAV restoration

Background

Previous SAV restoration efforts have largely been a series of small projects that varied widely in their purpose, objectives, and methods used.

An major advantage of this program is that it is being planned and coordinated at the national level as part of a comprehensive, multi-agency effort.

Background

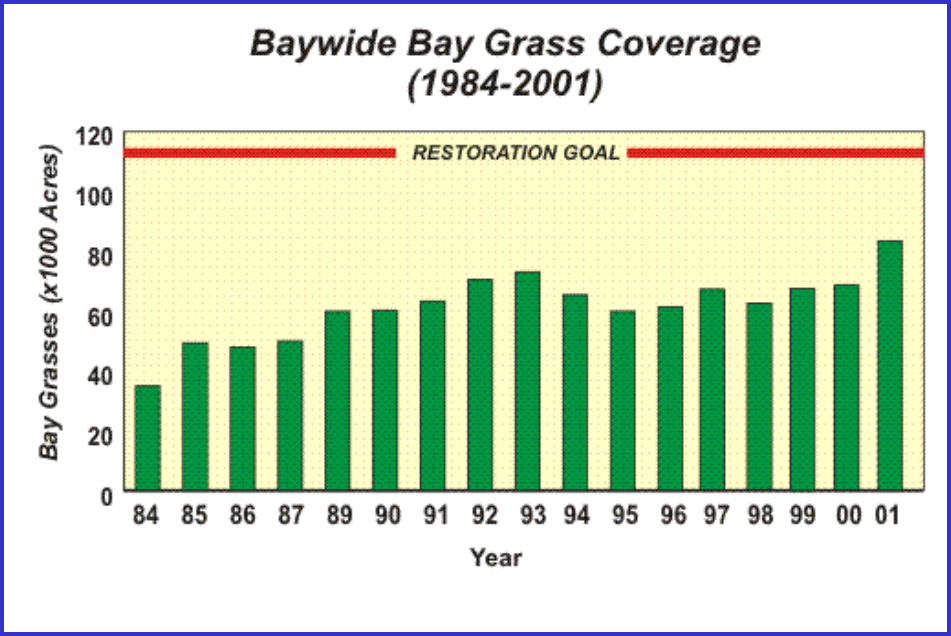
"Strategy to Accelerate the Protection and Restoration of Submerged Aquatic Vegetation in the Chesapeake Bay"

Chesapeake Bay Program
January 14, 2003

CBP SAV Protection and Restoration Initiatives

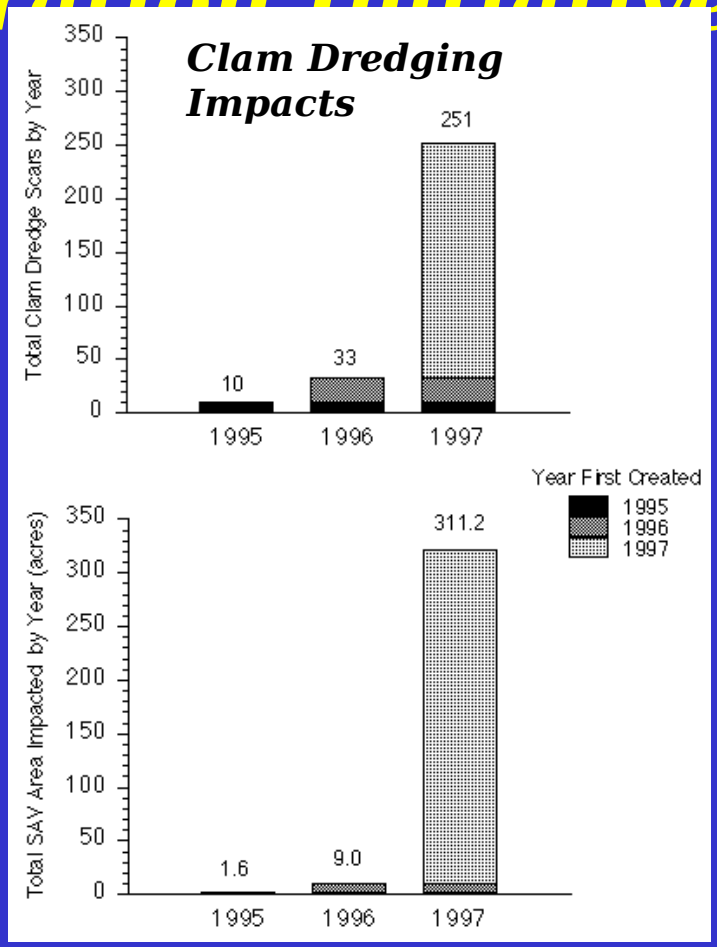
1. Provide the water clarity conditions necessary to support at least 114,000 acres of SAV

(interim CBP goal by 2005).



CBP SAV Protection and Restoration Initiatives

2. Provide existing SAV beds greater protection from anthropogenic activities and invasive species.



Data from VIMS report

CBP SAV Protection and Restoration Initiatives

3. Accelerate SAV restoration by planting 1,000 acres of new SAV beds by December 2008

What are the most cost-effective methods for large-scale planting?

CBP SAV Protection and Restoration Initiatives

4. Enhance SAV research, citizen involvement and education.

Teamwork Approach

ERDC

Deborah Shafer-EL

Dave Tazik-EL

Jack Davis-CHL

COE Baltimore District

Wes Coleman

Bill Abadie

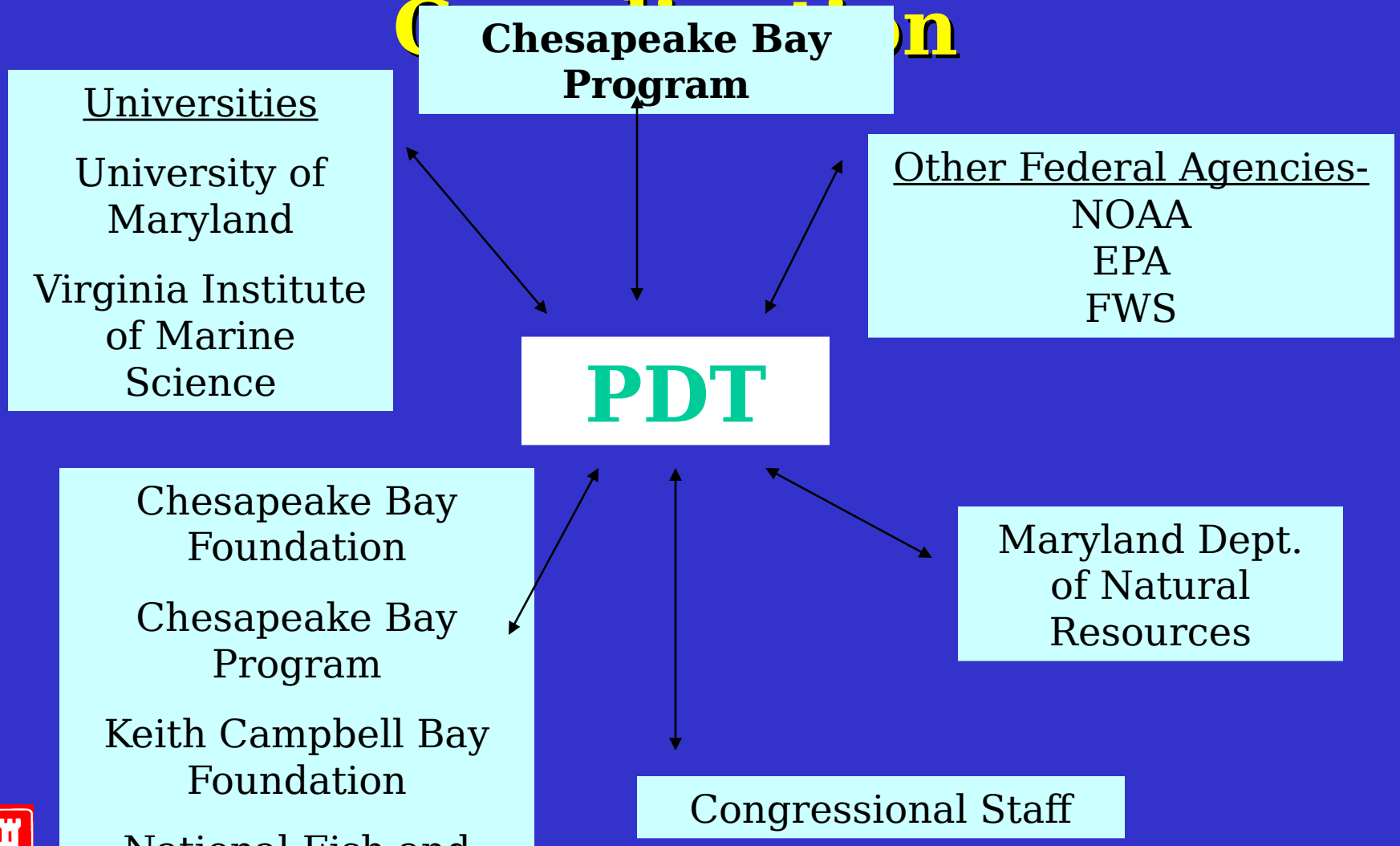
Michele Gomez

Mark Mendelsohn

Bob Blama

Corps Multi-disciplinary Project Delivery Team

Program Coordination



Research Focus Areas (FY 03-FY 04)

SAV Production and Planting

1. Issues related to plant supply and propagation (ACTION 3.2 in CB SAV STRATEGY)
2. Evaluating new equipment/techniques for SAV planting (e.g. mechanical planter vs hand planting)
3. Use of seeds/seedlings as planting material
4. Improving site selection criteria

Issues to Consider: SAV Production and Planting

Source: University of Rhode Island

Availability of donor sites?

Donor site impacts?

Most SAV restoration projects rely on whole plants collected in the wild

Source: University of Rhode Island

Projects Initiated in FY 03

Focus Area: SAV Production and Planting

1. Development of capability for large-scale eelgrass seed collection and storage

2. Demonstration Planting: Poplar Island

3. Demonstration Planting: Potomac River

4. Regional Workshop (*Baltimore, Sept 2003*)

Products

- Each planting project/work unit will have at least 1 accompanying **journal article**
- Results will be incorporated into **guidance document** on selection of appropriate methods for SAV restoration
- **Web link:** http://www.wes.army.mil/el/sav/

Ecological Benefits

- Overall improvements in ecosystem health
- Higher levels of ecosystem functions
- Increased habitat availability for economically important fisheries resources

Societal Benefits

- State-of-the-art technical standards and guidance for planning, implementation, and monitoring of submerged aquatic vegetation restoration projects will provide resource managers with the necessary tools to help meet targeted SAV restoration goals
- Research and technology demonstrations will contribute to improved success rates and predictability for submerged aquatic vegetation restoration projects
- Provide practical guidance on selection of appropriate methods for SAV restoration
- Improve coordination between Corps and other stakeholders involved in SAV restoration

Future Directions

- **Demonstration projects need a minimum of 2-3 years monitoring in order to evaluate success**

- **Additional funding would enable us to expand the scope and direction of the program to include a wider variety of plant species, planting techniques, and locations**

ependent on funding availability

Potential New Research Topics

- Engineered SAV Habitats
- SAV Assessment Methods

Links to Other Corps Programs

- Section 206 Aquatic Ecosystem Restoration
- Section 204 Beneficial Uses of Dredged Materials
- Section 227 Shoreline Erosion Control
- Ecosystem Management and Restoration Research Program (EMRRP)
- Aquatic Plant Control Program
- Regional Sediment Management Program (RSM)
- Dredging Operations and Environmental Research Program (DOER)

Q & A?